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10/501,953	11/28/2005	Eli Arad	P-7008-US	3425

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NEW YORK, NY 10038

EXAMINER

HOBAN, MATTHEW E

ART UNIT	PAPER NUMBER
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4116

MAIL DATE	DELIVERY MODE
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10/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,953	Applicant(s) ARAD ET AL.	
	Examiner Matthew E. Hoban	Art Unit 4116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status

Claims 1-11 are pending and presented for examination.

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: zinc and fluorine. The preamble of the claims state that the invention is directed towards a fluorinated zinc silicate glass; however, the language of the claims goes on to state that

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the composition of the glass is inclusive of zero molar percent in regards to zinc oxide, sodium fluoride, aluminium fluoride and calcium fluoride. If all of these components are 0% then the glass composition is subsequently not a fluorinated zinc silicate glass, as stated by the preamble of the claims. This causes the claims to be indefinite as to the actual composition of the glass. It is recommended that the ranges for the aforementioned components have a lower threshold greater than zero. For example, Zinc Oxide would be included in the composition in a range from .1 to 18 mol% ZnO.

3. Regarding claim 1 and 7, the phrase "comprised essentially" renders the claim indefinite because it is unclear what this phrase actually means. It is recommended that this term be deleted and replaced with a more acceptable phrase (as outlined by MPEP 2111.03 R-3), such as "consisting essentially of" or simply "comprising".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 6 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Smoot et al. in U.S. Patent Number 5,114,813.

The instant claim bears reference to an optical article fabricated in a planar slab of a fluorinated zinc-silicate glass by an ion-exchange process, where the zinc-silicate glass is a single exchangeable alkali ion glass

Smoot teaches a composition of glass, which is composed, of silica, soda, borio, alumina, zinc oxide, and fluorine (ie a fluorinated zinc-silicate) (Example Melt 18), where the composition is melted, processed and subsequently cut into thin plates (ie planar slab) and subjected to a Silver ion exchange process. The single alkali metal undergoing exchange in this situation is sodium (Column 11, Line 50-70). The product is then used optically as an E-beam writable substrate.

Claim Rejections - 35 USC § 102/103

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5 and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bartholomew et al. in U.S. Patent Number 4,160,654 ('654) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bartholomew et al. in U.S. Patent Number 4,160,654

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('654) in view of Moffatt et al. in RE37,920.

The instant application bears claim to a fluorinated zinc-silicate glass having a composition of 50-69% SiO₂, 0 to 13% B₂O₃, 2 to 6.50% Al₂O₃, 0 to 3.90% AlF₃, 10.40 to 17% Na₂O, 0 to 3% NaF, 0 to 18% ZnO, 0 to 3.20% ZrO₂, 0 to 0.80% MgO, 0 to 0.66% BaO, 0 to 6.72% CaO, 0 to 0.075% Sb₂O₃, and 0.08 to 0.11% As₂O₃. The composition can further contain 0 to 1 wt% CaF₂, and can also be comprised of 0 to 12.8 molar percent fluorine, where this fluorine is gained from sodium fluoride or aluminium fluoride. This composition can then be used in an ion exchange process, where Na₂O provides a Na ion for this process. The glass, however, is a single exchangeable alkali ion glass.

In relation to Claim 1, Bartholomew et al teach a composition that is photosensitive to UV radiation, where the patent specifically teaches a composition of glass that is composed of the following species in molar percents: 56.2% SiO₂, 14.1% Na₂O, 12.5% B₂O₃, 2.8% Al₂O₃, 8.2% Cl, 6.1% F. This composition is taught in Example 12, which can be found in Table I of the patent. The summation of the above components equals 99.9% of the molar percentage of the composition; however, it is previously mentioned in the patent that arsenic and antimony were included in the glass compositions to perform their conventional function as fining agents (Relevant to Claim 1; See Column 4, Lines 53-55). So although it is not specifically mentioned in the composition and a molar percentage is not recited, one of ordinary skill in the art would have envisaged the inclusion of such an oxide. This is typical in the glass forming industry, as these agents are used to release excess air bubbles in the melt and bear no major impact on the final composition. For this reason, arsenic is typically added to melts at a molar percentage

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of .1%. Another patent using fining agent or disclosing its use is RE37,920. RE37,920 discloses that:

Where desired, fining agents such as the oxides of arsenic and antimony, may be added in customary amounts. The small residual remaining in the glass has no substantial effect upon the physical properties of the glass. (Column 6, Lines 56-64)

Based on this statement, the addition of antimony in the amount of between .08 and .11 mol% is obvious in view of RE37,920, if not *envisaged* by '654.

In relation to claims 1-3, '654 contains no aluminium fluoride, sodium fluoride, zinc oxide, zirconia, magnesium oxide, barium oxide, calcium oxide, or antimony oxide. This is in line with the instant claims; however, the composition of example 12 of '654 contains 6.1% F, which reads on the range provided in Claim 3.

In relation to claim 4, the claimed refractive indices of the glass of claim 1 would be inherent in the glass of example 12 in '654. The glass of example 12 is of the same composition as that of the instant claims, so it would inherently have a refractive index in the same range as those of the instant claims.

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In relation to claim 5, the glass of '654 later goes on to be used in an ion exchange process, where the ions of Na or K are exchanged for Ag ions by placing the composition in a silver sulfate solution at 270 Celsius (Column 5, Line 60- Column 6, Line 7). It is well known that the silver ions replace alkali metal ions in the glass, wherein this composition sodium is the only alkali metal, so is the only ion going through the ion-exchange process. Therefore, the glass is a single exchangeable alkali ion glass, where Na is the only exchangeable alkali.

In relation to claims 7-9, please apply all of the criteria for rejections of claims 1 and 4-5 as outlined above in addition to the fact that it is disclosed that the glass of '654 is formed into a glass ribbon about 1 inch wide, and .015 inches thick. This constitutes a planar slab, as claimed by the instant application.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 6-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anna et al. in U.S. Patent Number 6,818,577 ('577) in view of Bartholomew et al. in U.S. Patent Number 4,160,654 ('654).

The instant claims are pointed towards a range of glass composition that is able to undergo ion exchange to provide an optical wave guide, which is due to the fact that the refractive index of the glass changes in the areas where the ion exchange process takes place. The instant claims are directed to an ion exchange process where there is only a single alkali ion being exchanged.

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'577 teaches a process of making optical waveguides through an ion exchange process, where alkali metals are exchanged for silver ions by being subjected to a molten silver bath. The process alters the refractive index of the glass by a magnitude large enough to create an optical waveguide from the material after the process is complete, where the optical waveguide is suitable for single mode light (Column 5, Lines 10-15). It is noted in Table 1 of this patent, that the refractive index of the glass changes by .01-.022, and the glass also has low birefringence and no coloration.

The difference between the prior art as relied upon above and the instant application is based on the fact that the composition of '577 does not fall into the range of compositions as recited by the instant claims. The compositions of '577 also include Lithium Oxide, which is construed as a second exchangeable ion species.

'654 discloses a composition substantially similar to that of '577, which also falls into the compositional range of the instant claims (Please see Example 12 of '654 or the claim rejections of claims 1-5 and 7-9 in the forthcoming 102/103 section). Due to the similar compositions of '654 and '577, it would seem obvious to use the composition of '654 in the ion exchange process, and subsequent fabrication of an optical guide, as disclosed by '577. If this combination were made a waveguide would be produced through a sodium ion exchange process in distinct areas. The waveguide would be functional based on the difference in refractive index in the areas where ion exchange occurred.

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It would have been obvious to try this combination; due to the fact the composition of Invention 3 in '577 is substantially similar to the composition as claimed by the instant claims. The only difference between the two is the fact that '577 includes a small amount of lithium (.05%), a second alkali. It would have been obvious to one of ordinary skill in the art to exclude this alkali from the composition or use a composition as set forth in '654. This is substantiated by the fact that it has been shown that the composition of '654 is capable of undergoing ion exchange.

Conclusion

In Retrospect: All claims all rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Hoban whose telephone number is (571) 270-3585. The examiner can normally be reached on Monday - Friday from 7:30 AM to 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VICKIE Y. KIM
SUPERVISORY PATENT EXAMINER

